

IN THE CLAIMS:

- 1 1. (Currently Amended) A microwave applicator comprising: ~~comprising~~
2 a coaxial electrical input; and
3 a waveguide filled with dielectric, the waveguide having a first end and a distal
4 end face, wherein
5 an inner conductor of the coaxial electrical input extends ~~extending~~ longitudinally
6 within the first ~~one~~ end of the waveguide to launch microwaves in the TM₀₁ mode to
7 travel to the distal end face of the waveguide so that microwaves are transmitted when
8 the distal end face is contacted by biological tissue to be treated.
- 1 2. (Previously Presented) A microwave applicator as claimed in claim 1 in which the
2 inner conductor is axially aligned with the waveguide.
- 1 3. (Previously Presented) A microwave applicator as claimed in claim 1 in which the
2 waveguide is a circular waveguide.
- 1 4. (Previously Presented) A microwave applicator as claimed in claim 1 in which the
2 distal end face is substantially flat and normal to the axis of the waveguide.
- 1 5. (Previously Presented) A microwave applicator as claimed in claim 1 in which the
2 distal end face is flat or slightly domed and centered on the axis of the waveguide.
- 1 6. (Previously Presented) A microwave applicator as claimed in claim 1 in which distal
2 end face has a polymer coating.
- 1 7. (Currently Amended) A microwave applicator as claimed in claim 1

2 in which the microwaves are of a designed operating frequency, the length and diameter
3 of the waveguide, the length of the inner conductor within the
4 waveguide, and the permittivity of the dielectric material being ~~are~~ selected so that at the
5 designed operating frequency, the waveguide is in resonance.

1 8. (Currently Amended) A microwave applicator as claimed in claim 1 in which the
2 waveguide is adapted so that ~~the~~ in operation, when the distal end face is in contact with
3 biological tissue to be treated, forwards transmission from the distal end face is enhanced
4 by the relative phase of reflections from the distal end face and the input to the
5 waveguide; and when the distal end face is in air or gas, reflections to the input are
6 enhanced by the relative phase of reflections from the distal end face and the input to the
7 waveguide.

1 9. (Currently Amended) A microwave applicator comprising ~~comprising~~:
2 a waveguide,
3 a coaxial electrical input with an inner conductor extending longitudinally within
4 one end of the waveguide to launch microwaves in the TM_{01} mode that travel to the distal
5 end of the waveguide and are transmitted into biological tissue to be treated, and
6 a diaphragm of low loss dielectric material being provided within the waveguide
7 so as to extend laterally of the waveguide to reflect the microwaves traveling along it, the
8 longitudinal location of the diaphragm being selected in relation to the ends of the
9 waveguide so that the phase of reflections from the diaphragm and said ends serve to
10 reduce or cancel rearward reflections in the coaxial input.

1 10. (Previously Presented) A microwave applicator as claimed in claim 9 in which the
2 thickness of the diaphragm, and the permittivity of the dielectric material from which it is
3 made are selected to determine the magnitude of the rearward reflection of microwaves
4 from the diaphragm for optimum cancellation of the rearward reflection in the coaxial
5 input.

1 11. (Previously Presented) A microwave applicator as claimed in claim 9 which is air-

2 filled.

1 Claims 12-18 Canceled.